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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,549	03/23/2004	Seung-Woo Kim	5000-1-569	2548

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EXAMINER

BOLDA, ERIC L

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/806,549

Applicant(s)

KIM ET AL.

Examiner

Eric Boldt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 6-111 is/are rejected.
- 7) ☒ Claim(s) 4,5 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to Applicant's amendment of March 20, 2006.
2. The objections to amended claims 4, 10, and 12 are withdrawn.
3. The objections to the amended specification are withdrawn.

Response to Arguments

4. Applicant's argument regarding rejection under 35 U.S.C. 112 have been considered and are persuasive (in view of the amended claims). The 35, U.S.C. 112 rejections of claims 5, 13 and 8 are withdrawn.
5. Applicant's arguments with respect to claims 1 and 8 have been considered but are moot in view of the new ground(s) of rejection below.
6. Applicant has challenged the Examiner to provide a reference showing the inherency of the cladding layers and active layer in a SOA. A reference teaching these features is supplied below.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
8. Claims 1, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiemeijer in view of Ventrudo (US Pat. No. 6,661,819).

Tiemeijer discloses in Fig. 1 a semiconductor optical amplifier SOA, with an active layer serving as a gain area, and a reflector disposed for reflecting light output from the SOA so that the light is input back to the active layer. Although not specifically

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shown, it is typical of an SOA that the active layer is formed between an under-cladding and an over cladding layer. This structure of an SOA is shown in Fig. 1 of Sakuda (US Pat. No. 4,747,650), under cladding layer (13), over cladding (15), and active waveguide (11) between them. It is inherent that antireflection layers are formed at both ends of the active layer (it is well-known that if such layers were not present, the device would be a laser). Neither Tiemeijer nor Sakuda discloses an optical waveguide configured to optically couple the SOA and reflector. However, Ventrudo (US Pat. No. 6,661,819) teaches an optical amplifier optically coupled via a (transmissive) optical waveguide. It would have been obvious to one skilled in the art (e. g. an optical engineer) to couple the SOA and the reflector of Timeijer as in Ventrudo, for the advantage of broadening the wavelength range of the output light (Ventrudo 4th para. lines 57-67). This modification would also reduce the gain ripple of the SOA (compare Fig. 3 curve A: output spectrum of Ventrudo's invention, to Fig. 3 curve B: prior art without a reflective grating).

The clause "so as to minimize a gain ripple of the semiconductor optical amplifier" is essentially a statement of intended or desired use. Also, the preamble "a broad-band light source" is one possible use of the device disclosed in Tiemeijer, when no input light is supplied. Thus, this claim does not serve to patentably distinguish the claimed structure over that of the reference. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 512 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See MPEP § 2114 which states:

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A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ 2nd 1647

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531.

Apparatus claims cover what a device is not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

With regard to claim 6, the mirror has a reflectivity greater than 1×10^{-5} .

With regard to claim 7, the device has a polarization controller (Faraday rotator).

With regard to claim 10, the light generated by the SOA reaches the reflector via the optical waveguide.

With regard to claim 13, the distance from the SOA to the reflector is 12.5mm (Fig. 1 of Tiemeijer).

With regard to claim 14, the mirror has a reflectivity greater than 1×10^{-5} .

With regard to claim 15, the device has a polarization controller (Faraday rotator).

9. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiemeijer in view of Ventrudo as applied to claims 1, 8 and 9 above and further in view of Nishimura (US Pat. No. 5,488,507). Tiemeijer in view of Ventrudo does not specifically disclose or suggest that the SOA comprises one of a traveling SOA or a reflective SOA. However, Nishimura teaches a traveling wave SOA. It would be obvious use the traveling wave SOA of Nishimura in the configuration of Tiemeijer for the purpose of reducing the drive current.

Note that the citations made herein are done so for the convenience of the applicant; they are in no way intended to be limiting. The prior art should be considered in its entirety.

Allowable Subject Matter

10. Claims 4, 5 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Shin et al., Yun et al., Van Deventer, Vail et al. disclose optical amplifiers with reflectors.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric Bolda whose telephone number is 571-272-8104. The examiner can normally be reached on M-F from 8:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Jack Keith, can be reached on 571-272-6878. Please note the fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EB

Eric Bolda


JACK KEITH
SUPERVISOR/PATENT EXAMINER